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KOOTENAI NATIONAL FOREST

RECREATION DEMAND

OCTOBER 17, 1984

JERRY HAUGEN

FOREST POLICY ANALYST

INTRODUCTION

This document describes the process used to develop estimates of the levels of public demand for various sorts of recreation use on the Forest to 200 years in the future.

The basis for demand estimates used on the Kootenai National Forest are the estimated use for 1984 and a projected population of the area extended to the year 2175. The 1984 use estimates are based upon observations and counts made by District personnel, registration cards left at trail heads, fees paid at developed sites and other indirect indications. The population projection is a mean of four alternative projections based upon measured population (census or other) each decade from 1890 to 1980. In addition projections developed by Region One of the Forest Service were used where better information was not available.

GENERAL

There are three definitions to consider:

1. potential use levels - the amount of use that can occur without significantly degrading the quality of the recreation excperience.
2. demand levels - the amount of recreation that would be used if it were available or, in other words, the amount of recreation desired by the public.
3. use levels - the amount of recreation that is used. This is the recreation that is assigned dollar values. It is the lessor of the potential use level or the demand level.

In order to properly analyze how a particular alternative will affect recreation use and management decisions on the forest it is necessary to compare estimates of <u>potential</u> use levels to estimates of demand levels. If the Forest has the potential for more use than that which is demanded, related management decisions tend to be less critical. If demand exceeds potential, then crowding, degraded quality of recreation and associated problems must be addressed by management. In this sense, the potential use levels are similar to supply levels of commodities.

REGION ONE U.S.F.S RECREATION DEMAND ESTIMATES

Projections of recreation demand were prepared by the Region One Office and are based directly upon population projections for the market area and adjoining metropolitan areas. The trends were based upon data from the 1980 Recreation Inventory and Management System summary. Those projections are as follows:

	MRVD'S AVERAGE ANNUAL					
	1980	DEC 1	DEC 2	DEC 3	DEC 4	DEC 5
WILDERNESS	42.10	47.01	62.31	81.14	103.49	130.52
PRIMITIVE	12.00	14.40	14.30	18.60	15.80	19.99
SEMI-PRIM NON-MOTOR	11.10	11.50	11.50	14.90	12.70	16.09
SEMI-PRIM MOTORIZED	65.50	72.92	92.31	120.30	131.59	165.89
ROADED NAT APPEARING	453.10	491.34	661.17	861.40	1123.61	1407.08
RURAL	78.20	85.42	109.18	148.78	198.13	249.86

The recreation use figures for 1984 reveal that in many cases the demand levels noted above have been greatly exceeded. It was necessary to develop new demand levels which were more consistent with the use levels actually experienced. In addition, current direction calls for estimates of recreation use for the following catagories by Forest Plan EIS alternative by decade:

Developed Recreation
Roaded Recreation
Semi-primitive Motorized Recreation
Semi-primitive Non-motorized Recreation
Wilderness Recreation

In order to properly analyze these catagories it is necessary that estimates of demand levels be prepared for them.

The demand levels prepared by the regional office are population based and are linked to 1980 use levels. The new demand levels described below use estimates of Lincoln County population as their base and are linked to the 1984 use levels.

POPULATION BASE POJECTIONS

Eight different population projections for Lincoln county were found in two sources (Libby Montana Comprehensive Planning Program, Northwest Planners, Inc., 1972 and The Lincoln County Economic Base Study, Sheridan Economic Consultants, 1975). Northwest Planners developed projections for 1975, 1980, 1985 and 1990. Sheridan Economic Consultants developed projections for 1980 and 1990. All of these projections demonstrate the difficulty in projecting trends into the future, regardless of the assumptions used. Northwest Planners estimated (in 1972) that the 1980 population would be 15,200 or 19,500 or 17,400 (a median). Sheridan Economic Consultants estimated (in 1975) that the 1980 population would be 17,720 or 19,261 or 18,299 or 17,944 or 17376 depending upon the assumptions used. The 1980 census says that the population was 17,752. The wide range of projections as compared to the actual population clearly shows the difficulty in a five to seven year projection. In order to display estimated use for decade 20 requires an estimate of demand and therefore a population projection to the year 2175 (mid point of decade 20). Obviously the numbers developed are fairly reliable initially and extremely unreliable near the end of the projection time frame.

The population projections used here are the mean of four projections developed as follows:

1. a linear projection of the population trends experienced from 1890 through 1980
2. a log function projection of the population trends experienced from 1890 through 1980
3. a 7% per decade increase from a 1980 base
4. a 10% per decade increase from a 1980 base.

The projections and regressions from 1890 to 2175 compared to the census figures are as follows:

POPULATION ESTIMATES

DEC	YEAR	CENSUS	LINEAR	LOG	7% ON 80	10% ON 80	MEAN
	1890	300	-541	-596	9,656	7,529	4,012
	1900	800	1,446	1,431	10,332	8,281	5,373
	1910	3,400	3,434	3,448	11,055	9,110	6,762
	1920	7,500	5,421	5,455	11,829	10,021	8,182
	1930	7,100	7,409	7,451	12,657	11,023	9,635
	1940	7,882	9,396	9,437	13,543	12,125	11,125
	1950	8,693	11,384	11,412	14,490	13,337	12,656
	1960	12,537	13,372	13,378	15,505	14,671	14,232
	1970	18,063	15,359	15,333	16,591	16,138	15,855
	1980	17,752	17,347	17,278	17,752	17,752	17,532
1	1985		18,341	18,247	18,373	19,527	18,622
2	1995		20,328	20,178	19,659	21,480	20,411
3	2005		22,316	22,099	21,035	23,628	22,270
4	2015		24,303	24,011	22,508	25,991	24,203
5	2025		26,291	25,911	24,083	28,590	26,219
6	2035		28,279	27,806	25,769	31,449	28,326
7	2045		30,266	29,690	27,573	34,594	30,531
8	2055		32,254	31,564	29,503	38,053	32,844
9	2065		34,242	33,429	31,568	41,858	35,274
10	2075		36,229	35,285	33,778	46,044	37,834
11	2085		38,217	37,133	36,142	50,649	40,535
12	2095		40,204	38,971	38,672	55,713	43,390
13	2105		42,192	40,801	41,380	61,285	46,414
14	2115		44,180	42,621	44,276	67,413	49,623
15	2125		46,167	44,434	47,375	74,155	53,033
16	2135		48,155	46,238	50,692	81,570	56,664
17	2145		50,142	48,033	54,240	89,727	60,536
18	2155		52,130	49,821	58,037	98,700	64,672
19	2165		54,118	51,599	62,099	108,570	69,096
20	2175		56,105	53,370	66,445	119,427	73,837

Use of the above population estimates requires the assumption that Forest recreation demand levels are directly related to local population or, if one holds that recreation demand levels are related to a wider regional population, it is necessary to assume that local population is a reasonable indicator of regional population. In any case, the above population figures will be used as a proxy for all indicators of recreation demand levels.

OBSERVED 1984 USE LEVELS

It is intuitively obvious that the Kootenai National Forest currently has more opportunity for recreation than is being used thus the 1984 use figures are a good estimator of 1984 demand levels. The average annual demand for recreation in decade 1 (1980 - 1989) can then be said to be simply the 1984 level assuming that 1984 is close enough to the midpoint of the decade for the purposes of this analysis. The 1984 use levels are as follows:

Developed Recreation:	470,389 RVD's
Roaded Recreation:	755,677 RVD's
Semi-Primitive Non-Motorized Recreation:	242,387 RVD's
Wilderness Recreation:	71,215 RVD's

There is no measure of Semi-Primitive Motorized recreation use levels therefore the Decade 1 estimate of demand prepared by the Regional Office will be used. That figure is 72,920 RVD's.

In order to use these values as a basis for projecting recreation demand into the future it is necessary to generate the decade one coefficients of RVD's per population base unit. Since the first decade population is indicated by the 1985 population estimate, the coefficients are the above Decade One use (or demand) levels divided by 18,622 (the estimated 1985 population). The coefficients are as follows:

Developed Recreation:	25.3 RVD's/unit population
Roaded Recreation:	40.6 RVD's/unit population
Semi-Primitive Non-Motorized Recreation:	13.0 RVD's/unit population
Semi-Primitive Motorized Recreation:	3.9 RVD's/unit population
Wilderness Recreation:	3.8 RVD's/unit population

PROJECTED RECREATION DEMAND LEVELS

The projected demand levels are estimated by multiplying the coeficients noted above by the estimated population at the midpoint of each decade. The resulting values are noted below. They represent the average annual demand for the noted type of recreation for each decade in the planning horizon.

KOOTENAI NATIONAL FOREST
PROJECTED RECREATION DEMAND
MRVD's AVERAGE ANNUAL

DEC	DEVELOPED	ROADED	SP MOTOR	SP NONMOT	WLDERNESS
1	470	755	73	242	71
2	516	829	80	265	78
3	563	904	87	290	85
4	612	983	94	315	92
5	663	1064	102	341	100
6	717	1150	110	368	108
7	772	1240	119	397	116
8	831	1333	128	427	125
9	892	1432	138	459	134
10	957	1536	148	492	144
11	1026	1646	158	527	154
12	1098	1762	169	564	165
13	1174	1884	181	603	176
14	1255	2015	194	546	189
15	1342	2153	207	689	202
16	1434	2301	221	737	215
17	1532	2458	236	787	230
18	1636	2626	252	841	246
19	1748	2805	269	898	263
20	1868	2998	288	960	281

USE OF DEMAND PROJECTIONS

The projections listed on the preceeding page will be compared to estimates of the capacity of the Forest to supply each of the various sorts of recreation. Where demand exceeds estimated capacity management problems can be anticipated.

For purposes of estimating the present net value of the Forest as managed under each of the alternatives the demand projections will be used to assure that recreation is not valued in excess of demand.

ELK HUNTING POTENTIAL

A sixth type of recreation for which estimates are required is Elk Hunter RVD's. For the puposes of the analysis for the Forest Plan it will be assumed that the number of elk hunter RVD's will be related to the number of elk available and harvest ratios and RVD's per harvested elk developed by A. Christenson, KNF Wildlife Biologist, based upon information in the Montana Statewide Comprehensive Outdoor Recreation Plan. A harvest ratio of 15% is used and RVD's per harvested elk are allowed to vary from 32.56 to 85.65 from decades one through five. The variation in RVD's per harvested elk reflect changing success ratios.

It will be assumed that the elk hunter recreation estimates can be viewed as both demand estimates and capacity estimates. In effect saying that all available hunter recreation will be used. This sort of recreation is considered to be a subset of the other five types. Some elk hunter recreation occurs in both motorized and non-motorized settings.